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being in an unsettled condition. Philosophers whose intellectual interests are remote from mathematics are taking little interest in the linear continuum as created by the school of Georg Cantor. Nor do they offer a satisfactory substitute. The main difficulty is not primarily one of logic; it is one of postulates or assumptions. What assumptions are reasonable and useful? On this point there is disagreement. Cantor and his followers are willing to assume a continuum which transcends sensuous intuition. Others are not willing to do so. Hence the divergence. In the Koran there is a story that, after the creation of Adam, the angels were commanded to make him due reverence. But the chief of the angels refused, saying: "Far be it from me a pure spirit to worship a creature of clay." For this refusal he was shut out from Paradise. The doom of that chief, so far as the mathematical paradise is concerned, awaits those who refuse to examine with proper care the massive creation by our great mathematicians, without which the tiniest quiver of a leaf on a tree remains incomprehensible.<sup>1</sup>

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## MATHEMATICAL MEETINGS IN CALIFORNIA.

### I. THE TWENTY-SECOND SUMMER MEETING OF THE AMERICAN MATHEMATICAL SOCIETY.

The American Mathematical Society met for its twenty-second summer meeting as announced by the Society, on August 3, 1915, at the University of California in Berkeley. The first meeting was in conjunction with Section A of the American Association for the Advancement of Science, on Tuesday morning. Professor Keyser, of Columbia University, delivered an address on the human significance of mathematics, and Director Hale, of the Mount Wilson Solar Observatory, delivered an address on the work of a modern observatory. The attendance was very large and included members of the American Mathematical

<sup>1</sup>Since the completion of this article there has appeared Bertrand Russell's *Our Knowledge of the External World as a Field for Scientific Method in Philosophy*, Open Court Company, 1914, in which much attention is given to Zeno's arguments. An article on Zeno by Philip E. B. Jourdain will soon appear in *Mind*.

Society and the American Astronomical Society as well as members of the Association at large. At least 250 persons were present. Following this session the two societies enjoyed a luncheon at the University Faculty Club as the guests of Professors Leuschner, Haskell and E. B. Lewis.

The first separate session of the Society was held Tuesday afternoon at the University of California, where papers were presented by Professor L. E. DICKSON, University of Chicago; Professor C. J. DE LA VALLÉE POUSSIN, University of Louvain; Mr. A. R. SCHWEITZER, Chicago, Ill.; Dr. NATHAN ALTSHILLER, University of Colorado; Professor L. J. RICHARDSON, University of California; Dr. DUNHAM JACKSON, Harvard University; Dr. W. W. KÜSTERMANN, University of Michigan; Professor G. A. MILLER, University of Illinois; Professor H. S. WHITE, Vassar College; and Professor M. W. HASKELL, University of California.

The members present were largely from the Pacific coast, although a few from the eastern states were present. The lists of those present will appear as usual in the BULLETIN of the American Mathematical Society.

On Wednesday the Society met at Stanford University and papers were presented by Dr. B. A. BERNSTEIN, University of California; Dr. C. A. FISCHER, Columbia University; Mr. A. R. WILLIAMS, and Professor L. M. HOSKINS, Stanford University. Since this completed the program the other sessions announced were not necessary.

Returning to Berkeley Wednesday evening the society enjoyed dinner again in conjunction with the American Astronomical Society at the Hotel Oakland in Oakland.

On Friday about 50 members of the two societies took a very delightful trip to the Lick Observatory on Mount Hamilton, which was reached by automobiles from San José, and after remaining overnight in San José, enjoyed the hospitality of Mrs. Hearst on the return trip to San Francisco.

A more detailed account of this meeting will of course appear in the BULLETIN of the American Mathematical Society. To those easterners who were present the occasion was particularly delightful and was a revelation of the possibilities of the Coast both as a mathematical center and as an enjoyable meeting place.

## II. OTHER MEETINGS AT CALIFORNIA.

In addition to the meeting of the American Mathematical Society in California, a large number of other meetings were held in connection with the exposition, the meetings themselves being largely in Berkeley, the seat of the University of California, or in Oakland, which immediately adjoins Berkeley.

Among the meetings of particular interest to the readers of the MONTHLY would be the American Association for the Advancement of Science, which was held during the entire week of August 1-7, and which will be reported in detail in the *Proceedings* of the Association. The attendance at this meeting was very large, and the members of the various component societies thought that the occasion was well chosen for a meeting. This is the more remarkable on account of the fact that the meeting was specially called, since the Association now has its regular meetings during the Christmas holidays.

Another gathering of peculiar interest was the meeting of the Association of American Agricultural Colleges and Experiment Stations, August 11-13, at Berkeley. The name of this association may seem to indicate that it is interesting only to agriculturalists but attention should be called to the fact that the Association includes all of the so-called Land-Grant colleges, which receive aid under various national acts from the United States government. Thus many state universities were represented at this meeting, and such institutions as the Massachusetts Institute of Technology. A subsidiary association of considerable importance to those interested in mathematics was the Land Grant College Engineering Association, which met at the same time. To those who are not aware of the purposes of these two associations it may be pointed out that one very important project before them at present is to secure government aid for the establishment of engineering experiment stations in the various land-grant colleges.

Finally, the meeting of the National Education Association held in Oakland, August 16-28, will be of interest to those who have to do with secondary education either directly or indirectly. No full account of this meeting is possible and we must content ourselves with the statement that it was a very large meeting and that a full report of it will be published by the Association itself. One discussion that occurred there which will be of interest to all who read the MONTHLY was concerned with the establishment of six-year high schools—a movement which would seem to be well under way and to promise great changes and considerable success in the near future.

A large number of other meetings of educational importance were held, including for example the Association of American Universities and the Association of American State Universities.

On the whole the meetings held this summer in California will certainly take rank as one of the most important groups of meetings which have ever been held in the United States.

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## HISTORY OF MATHEMATICS.

By G. A. MILLER, University of Illinois.

In February, 1640, Descartes wrote as follows: "I am accustomed to distinguish two things in the mathematics, the history and the science. *By the history I mean whatever is already discovered, and is committed to books.* And by the science, the skill of resolving all questions, and thence by investigating by our own industry whatever may be discovered in that science by human ingenuity. He who possesses this faculty has but little need of other assistance, and may therefore be properly called self-sufficient. Now it is much to be wished that this mathematical history, which lies scattered through many volumes, and is not yet entire and complete, were to be all collected into one book."<sup>1</sup>

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<sup>1</sup> *The Philosophical Transactions of the Royal Society of London* (Abridged), Vol. 2, 1809, p. 533.